REMARKS

1. The Applicant expresses his appreciation to the Examiner for the diligence shown in the examination of this application, and for the telephone interview of 11/20/07. During the interview, draft claims incorporating the amendments of the claims submitted herewith were discussed.

2. Reconsideration of the application as amended is respectfully requested.

3. The Abstract was amended to correct informalities noted in the Office Action.

4. Independent claims 1, 17 and 25 were amended to more particularly claim the invention and to better distinguish over the art of record. Specifically, methodology for correlating a decrease in resistivity with a degraded condition of the polymer (claim 1 and means for correlating a decrease in resistivity with degradation (Claims 17 and 25) were added to further distinguish the method and product claims from the cited and referenced art. New claims 45-52 were added with a similar limitation. Claims 32-38 were withdrawn under a previous restriction. The Applicant submits that these amendments are fully supported by the specification (pg. 4, lines 5-9, FIGS. 1A-1D) These claims are all submitted to be patentable over the cited references because they (1) recite novel structure and thus distinguish physically over every reference (Section 102) and (2) the physical distinctions effect new and unexpected results, thereby indicating that the physical distinctions are unobvious under Section 103.

5. Claims 1-10, 13-31 and 39-43 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Saylak et al. (US Patent 3,603,142) in view of Voelker et al. (US Patent 5,789,665) or Kondo et al (JKP 61-44339) and Ortiz et al (US 4,988,875).

6. Saylak et al. discloses a method of detecting cracks and measuring fatigue in rocket motor casings. The method incorporates loss of current flow through a strip disposed on a propellant grain when a crack propagates through the strip. Voelker et al. discloses a oil

quality sensor having beads reacting to a polar environment. Kondo discloses an oil deterioration detector having electrodes made of a conductive epoxy. Ortiz et al. discloses a near infrared inspection system. The system incorporates a light source and a video camera.

The Novel Physical Features Of The Claims Provide New and Unexpected Results And Hence Should be Considered Unobvious, Making the Claims Patentable Under Section 103.

7. The Applicant submits that the method and apparatus of independent claims 1, 17 and 25, as amended, previously presented base claim 39 and new claim 45 provide new and unexpected results and hence should be considered unobvious, making the claim patentable under Section 103.

Specifically, the decrease in resistivity of a conductive composite, made of a polymer and a conductive filler, correlates to a degraded state (aging) of the polymer.

The primary cited and relied-upon Saylak et al. teaches an increase in resistance for crack detection in a propellant grain (col 1, lines 53-57). Even in stress determination (not in itself a degraded condition) Saylak et al. teaches an increase in resistance (col 1, lines 63-68). Neither do the other references disclose use of a decrease in resistivity to monitor a degraded condition of a polymer. Voelker et al. teaches increased resistance (decreased conductivity, col. 5, lines 30-33) as the oil degrades. Kondo teaches an increase in resistance as a function of driving distance (FIGS. 3, 4). The cited and relied-upon Ortiz et al. reference does not teach use of resistivity at all in degradation of polyethylene, but rather light transmissivity.

This reduction in resistivity results from age-related volumetric shrinkage of the polymer resulting from various aging mechanisms of the polymer. The fact that resistivity is used as an *indirect* indicator of this age-related shrinkage produces an *extremely sensitive indicator of aging*. Only a few percent change in a physical property such as specific

volume (difficult to detect in the field) surprisingly results in *several orders of magnitude change when resistivity is used as the detection means.*

Unsuggested Combination

8.. Neither Saylak et al., Voelker et al, Kondo, nor Ortiz et al. contain any suggestion that the disclosed features recited in these remarks be combined.

References Take Different Approaches

9. Saylak et al teaches detection of cracks in solid propellant grains by sensing loss of continuity in a polymeric strip. Voelker et al. and Kondo teach very different methods to detect liquid oil degradation. Ortiz et al. teaches use of near-infrared radiation for detecting polyethylene tape flaws. Since they teach such disparate subjects and methods, it would not be logical to combine them.

Even If Combined, the References do not Teach the Invention as Claimed.

10. Even if the references are combined as suggested, the resulting combination would still not result in the invention as claimed. Such a combination would not monitor polymeric degradation by a decrease in resistance.

The Cited But Non-Applied References

11. These subsidiary references have been noted and reviewed, but are submitted to be less relevant than the relied upon references.

The Dependent Claims Are A-fortiori Patentable

12. The dependent claims add additional novel features and thus are submitted to be, a-fortiori, patentable.

Allowance Requested

For the above reasons, the Applicant submits that the Electrical Condition Monitoring Approach for Polymers, disclosed and claimed in the present application is not taught by any of the references of record, taken either alone, or in combination as agreed during the

telephone interview of 11/20/07. Therefore, allowance of the present application is in order and respectfully requested.

Request For Constructive Assistance

The undersigned has made a diligent effort to amend the claims of this application so that they define novel structure and render the claimed structure unobvious because it produces new and unexpected results. If for any reason the claims of this application are not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to MEP 707.07(j) and MEP 706.03 (d) in order that this application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Very Respectfully,

Kenneth S. Watkins, Jr.
Registration No. 37466

372 River Drive
Dahlonega, GA 30533
Ph. (706)864-6304
Fax (706) 864-1056

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: MS: Non-Fee Amendments, Commissioner of Patents, PO Box 1450, Arlington, VA 22313-1450 on: 11/21/2007

/Kenneth S. Watkins Jr./
Name of Registered Representative

11/21/07
Signature Reg. No. 37466